Make the bulb light up

Electricity · Year 5–7 · ±9 min Hard

Name: ..... Date: .....



Today you learn: I can explain when a circuit works and which materials conduct electricity.

Remember

Electricity only flows round a closed circuit: from the battery, through the wires and the bulb, and back to the battery. A conductor lets electricity through; an insulator does not.

EXAMPLE

Switch on = circuit closed. Switch off = circuit open.

1 Medium

True or false?

	True	False
A bulb only lights when the circuit is closed.	☐	☐
A switch that is off makes a gap in the circuit.	☐	☐
Plastic conducts electricity well.	☐	☐
With two batteries in a row, the same bulb shines more brightly.	☐	☐
If you unscrew one of two bulbs in a single loop, the other one stays lit.	☐	☐
Touching the inside of a plug socket is safe if your hands are dry.	☐	☐

2 Hard

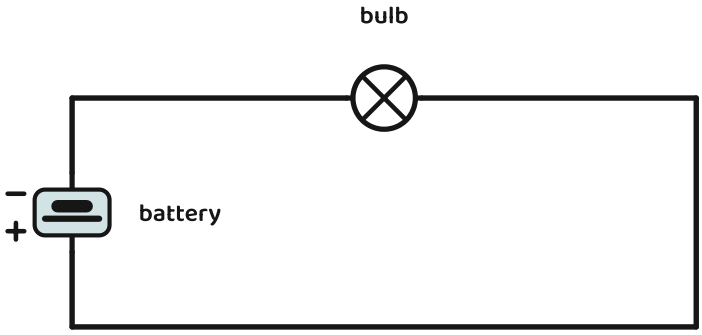
Conductor or insulator? Put each object in the right column.

Choose from: 1. coin | 2. copper wire | 3. elastic band | 4. wooden clothes peg | 5. plastic ruler | 6. steel spoon | 7. glass marble | 8. pencil lead (graphite)

conductor	insulator

3 Hard

Lisa builds a circuit with a battery, a bulb and two wires, but the bulb does not light. Name two things that could be wrong.



Lisa's circuit

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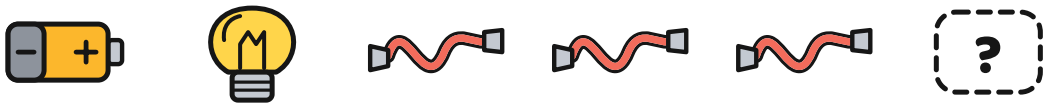
4 Hard

Why are electric wires covered in plastic?

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5 Hard

Work out how you could use a battery, a bulb and three wires to test whether an object is a conductor. This is what you have: look at the picture.



battery | bulb | wire | wire | wire | object

How did it go? ☺ 😐 ☹

Stuck? Turn the sheet round and read the tip for your number.

Help card

1. Picture the circuit as a loop that must be closed. For each sentence ask: is the loop still closed?

2. Most metals let electricity through. Careful: one thing without any metal does too.

3. Check every part, from one end of the battery to the other.

4. Which column did you put plastic in?

5. What happens to the bulb when the circuit is complete again?

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Answers: Make the bulb light up

For the parent · Year 5–7 · Hard

Today you learn: I can explain when a circuit works and which materials conduct electricity.

Check it together. When something is wrong, first ask: how did you work that out? Give the tip before the answer.

1. 1: True · 2: True · 3: False · 4: True · 5: False · 6: False

   Tip: Picture the circuit as a loop that must be closed. For each sentence ask: is the loop still closed?

2. **conductor:** copper wire, steel spoon, pencil lead (graphite), coin
   insulator: elastic band, plastic ruler, wooden clothes peg, glass marble

   Tip: Most metals let electricity through. Careful: one thing without any metal does too.

3. For example: a wire is loose (the circuit is open), the battery is flat, or the bulb is broken.

   Tip: Check every part, from one end of the battery to the other.

4. Plastic is an insulator. Electricity cannot pass through it, so you do not get a shock and the wires do not touch each other.

   Tip: Which column did you put plastic in?

5. Leave a gap in the circuit and put the object in the gap. If the bulb lights, it is a conductor.

   Tip: What happens to the bulb when the circuit is complete again?

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